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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.
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09/497,292 02/03/00 MARINO

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EXAMINER

007663 WM02/1011
STETINA BRUNDA GARRED & BRUCKER
75 ENTERPRISE, SUITE 250
ALISO VIEJO CA 92656

BURD, K ART UNIT	PAPER NUMBER
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2631
DATE MAILED:

10/11/01

Please find below and/or attached an Office communication concerning this application or proceeding.

Commissioner of Patents and Trademarks

Office Action Summary

Application No.
09/497,292

Applicant(s)
MARINO, JR.

Examiner
Kevin M. Burd

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2631



-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136 (a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on Sep 21, 2001
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11; 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 40-64 is/are pending in the application.
- 4a) Of the above, claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 40-64 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claims _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on Feb 3, 2000 is/are objected to by the Examiner.
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. § 119

- 13) ☐ Acknowledgement is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d).
- a) ☐ All b) ☐ Some* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- *See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgement is made of a claim for domestic priority under 35 U.S.C. § 119(e).

Attachment(s)

- 15) ☐ Notice of References Cited (PTO-892)
- 16) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 17) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s). _____
- 18) ☐ Interview Summary (PTO-413) Paper No(s). _____
- 19) ☐ Notice of Informal Patent Application (PTO-152)
- 20) ☐ Other:

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DETAILED ACTION

1. This office action, in response to the request for continued examination and the amendment filed 9/21/2001, is a non-final office action.

Response to Arguments

2. The objection to the drawings stated in the previous office actions is maintained.
3. Applicant's arguments filed 9/21/2001 have been fully considered but they are not persuasive.

Applicant has canceled the previously pending claims and added new claims 40-64. Applicant has added the feature of time and frequency synchronization of the first and second receiver. Applicant states neither Clough nor Chang show this feature. However, Clough states in column 3, lines 14-19, the A/D converters in the receivers same the incoming data at the same frequency. Clough also states in column 7, lines 48-52, the signals are sampled at the same constant discrete time intervals in each A/D converter. The A/D converter is a component of each of the receivers. If the A/D converters are synchronized, then the receivers are synchronized. Chang discloses in column 4, lines 44-56, the noise that is detected in each receiver will be on the same frequency. The receivers are synchronized to the same frequency. Chang also states the receivers receive signals at the same time. However, since this occurs, the signal

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will be displaced in time due to the differences in the length the path of the signal must travel. This difference in time is then compensated for so the subtraction step removes the proper signal components.

Drawings

4. The drawings are objected to under 37 CFR 1.83(a). The drawings must show every feature of the invention specified in the claims. Therefore, the means to digitize and demodulate the received signals and the converting signals to a corresponding voltage or current must be shown or the features canceled from the claims. No new matter should be entered.

Claim Rejections - 35 USC § 103

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

6. Claims 40-56, 63 and 64 are rejected under 35 U.S.C. 103(a) as being unpatentable over Clough et al (US 4,672,674).

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Regarding claims 40, 43 and 54-56, Clough discloses a system for suppressing noise signals from a signal containing both voice data and noise signals, the system comprising:

- a first receiver operative to receive both noise and voice data (column 4 lines 12-14), the first receiver being operative to demodulate and digitize (figure 1 item 5) the voice data and noise signals;

- a second receiver operative to receive primarily the noise signals (column 4 lines 14-15), the second receiver being time and frequency synchronized (column 3 lines 10-25) and operative to demodulate and digitize the noise signals (figure 1 item 6);

- storage means for storing the samples from the first and second receivers (column 3 lines 36-37); and

- adaptive filtering means operative to suppress the noise signals in order to extract the voice data (figure 1 and column 3 lines 31-45 and 53-57).

Clough discloses in the abstract, the first receiver is arranged to be close to the mouth of the user and the second receiver will be spaced apart by a distance of one up to ten cms. Clough does not specifically state what the term "close to the mouth of a user for reception of speech" but it is presumed the distance will be roughly one cm. Therefore, the distance between the microphones will be ten times the distance between the first microphone and the user.

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Clough states in column 3, lines 14-19, the A/D converters in the receivers same the incoming data at the same frequency. Clough also states in column 7, lines 48-52, the signals are sampled at the same constant discrete time intervals in each A/D converter. The A/D converter is a component of each of the receivers. If the A/D converters are synchronized, then the receivers are synchronized.

Although Clough does not discloses receiving radiated emissions and ambient signals, Clough does disclose receiving a desired signal (the information signal) and an interfering signal (noise signal), receiving a interfering signal (noise signal) and subtracting the signals to recover the desired signal. It would have been obvious for one of ordinary skill in the art at the time of the invention to utilize this method of cancellation in any application that required the elimination of interfering signals to allow for the recovery of the desired signal.

Regarding claim 41, Clough discloses a system for suppressing noise signals from a signal containing both voice data and noise signals as stated above. Clough further discloses converting the received signals into a corresponding voltage (figure 1 items 5 and 6).

Regarding claim 42, Clough discloses a system for suppressing noise signals from a signal containing both voice data and noise signals as stated above. Clough further discloses converting the received signals into a corresponding voltage (figure 1 items 5 and 6). Clough does not disclose converting the received signals into a

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corresponding electrical current. However, it would have been obvious for one of ordinary skill in the art at the time of the invention to convert the received signals into a corresponding electrical current. By converting the signals into electrical current, only a minimal loss of signal strength would occur to the signal while traveling along the electrical conducting cable link as compared to a greater loss in voltage form do to the resistance of the wire.

Regarding claims 44 and 45, Clough further discloses the microphones are coupled to the analog to digital converters (A/D) by and electrical conducting means (figure 1).

Regarding claim 46, Clough discloses the two microphones can be arranged in one boom arm (column 3 lines 62-64).

Regarding claims 47-49, 52, 53, 63 and 64, Clough discloses the A/D converters sample the input samples at the same frequency and are therefore synchronized (column 3 lines 14-19). It is inherent that clock signals must be transmitted to each of the A/D converters to maintain this synchronization.

Regarding claim 50, Clough discloses a plurality of microphones can be used to receive the noise signals (column 3 lines 48-52).

Regarding claim 51, Clough discloses a system for suppressing noise signals from a signal containing both voice data and noise signals as stated in paragraph 3. Clough does not disclose the use of a plurality of microphones to receive the voice data

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and noise signals. However, it would have been obvious for one of ordinary skill in the art at the time of the invention to use a plurality of microphones to receive the voice data and noise signals. With more than one microphone, it is possible to receive a plurality of voice signals from more than one source and after the noise signal has been removed and with proper filtering, all of the voice signals can be recovered.

7. Claims 57-62 are rejected under 35 U.S.C. 103(a) as being unpatentable over Clough et al (US 4,672,674) in view of the instant applications admitted prior art.

Regarding claims 57-62, Clough discloses a system for suppressing noise signals from a signal containing both voice data and noise signals as stated above. Clough further discloses adaptive filtering is conducted to recover an audible signal (figure 1 and column 3 lines 39-45 and 53-57). However, Clough does not disclose which adaptive algorithm is used. "The two most common classes of adaptive filter algorithms are Stochastic Gradient based algorithms and Least-square based algorithms" page 16 lines 21-23 of the instant application. It would have been obvious for one of ordinary skill in the art to use the most common types of adaptive algorithms in the adaptive filtering conducted by Clough since these types of algorithms are the most widely used.

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8. Claims 40-56, 63 and 64 are rejected under 35 U.S.C. 103(a) as being unpatentable over Chang (US 4,912,767).

Regarding claims 40, 41, 43 and 54-56, Chang discloses a system for suppressing noise signals from a signal containing both voice data and noise signals, the system comprising:

- a first receiver operative to receive both noise and voice data (abstract);

- a second receiver operative to receive primarily the noise signals (abstract), the second receiver being time and frequency synchronized (column 3 lines 10-25); and

- adaptive filtering means operative to suppress the noise signals in order to extract the voice data (figure 2 and abstract and column 6 lines 8-15).

Chang discloses the noise signals and the voice data /noise signals inputs are received by microphones (column 5 lines 17-29) and the microphones are spaced apart some distance apart.

Chang discloses in column 4, lines 44-56, the noise that is detected in each receiver will be on the same frequency. The receivers are synchronized to the same frequency. Chang also states the receivers receive signals at the same time. However, since this occurs, the signal will be displaced in time due to the differences in the length the path of the signal must travel. This difference in time is then compensated for so the subtraction step removes the proper signal components.

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Although Chang does not disclose receiving radiated emissions and ambient signals, Chang does disclose receiving a desired signal (the information signal) and an interfering signal (noise signal), receiving a interfering signal (noise signal) and subtracting the signals to recover the desired signal. It would have been obvious for one of ordinary skill in the art at the time of the invention to utilize this method of cancellation in any application that required the elimination of interfering signals to allow for the recovery of the desired signal.

Also, Chang does not disclose demodulating and digitizing the received signals in the first and second receivers. It is inherent that this step be done before the signals are to be processed after the subtraction occurs.

Regarding claim 42, Chang further discloses converting the received signals into a corresponding voltage (figure 1 items 5 and 6). Chang does not disclose converting the received signals into a corresponding electrical current. However, it would have been obvious for one of ordinary skill in the art at the time of the invention to convert the received signals into a corresponding electrical current. By converting the signals into electrical current, only a minimal loss of signal strength would occur to the signal while traveling along the electrical conducting cable link as compared to a greater loss in voltage form due to the resistance of the wire.

Regarding claims 44 and 45, Chang further discloses the microphones are coupled to the adaptive filters by and electrical conducting means (figure 2).

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Regarding claim 46, Chang discloses the two microphones can be arranged on a pilot's face mask (column 5 lines 17-29).

Regarding claims 47-49, 52, 53, 63 and 64, Chang discloses the receivers are synchronized (column 4 lines 44-56). It is inherent that clock signals must be transmitted to each of the receivers to maintain this synchronization.

Regarding claims 50 and 51, Chang does not disclose the use of a plurality of microphones to receive the voice data and noise signals. However, it would have been obvious for one of ordinary skill in the art at the time of the invention to use a plurality of microphones to receive the voice data and noise signals. With more than one microphone, it is possible to receive a plurality of voice signals from more than one source and after the noise signal has been removed and with proper filtering, all of the voice signals can be recovered.

9. Claims 57-62 are rejected under 35 U.S.C. 103(a) as being unpatentable over Chang (US 4,912,767) in view of the instant applications admitted prior art.

Regarding claims 57-62, Chang discloses a system for suppressing noise signals from a signal containing both voice data and noise signals as stated in paragraph 3. Chang further discloses adaptive filtering is conducted to recover an audible signal (figure 2). However, Chang does not disclose which adaptive algorithm is used. "The two most common classes of adaptive filter algorithms are Stochastic

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Gradient based algorithms and Least-square based algorithms" page 16 lines 21-23 of the instant application. It would have been obvious for one of ordinary skill in the art to use the most common types of adaptive algorithms in the adaptive filtering conducted by Chang since these types of algorithms are the most widely used.

Conclusion

10. Any response to this action should be mailed to:

Commissioner of Patents and Trademarks
Washington, D.C. 20231


or faxed to:


(703) 872-9314, (for formal communications intended for entry or for informal or draft communications, please label "PROPOSED" or "DRAFT")

Hand-delivered responses should be brought to Crystal Park II, 2121 Crystal Drive, Arlington, VA., Sixth Floor (Receptionist).

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Kevin Burd, whose telephone number is (703) 308-7034. The Examiner can normally be reached on Monday-Thursday from 9:00 AM - 5:00 PM. The examiner can also be reached on alternate Friday.

Any inquiry of a general nature or relating to the status of this application should be directed to the Group receptionist whose telephone number is (703) 305-4700.


CHI PHAM
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 2600 10/1/01


Kevin M. Burd
PATENT EXAMINER
October 5, 2001